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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Luzhou Xu

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Docket Clerk

P.O. Box 802432

Dallas, TX 75380

EXAMINER

FLORES, LEON

ART UNIT

PAPER NUMBER

2611

NOTIFICATION DATE

DELIVERY MODE

06/23/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/500,548	<b>Applicant(s)</b> XU ET AL.	
	<b>Examiner</b> LEON FLORES	<b>Art Unit</b> 2611	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 April 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 2-5, 8 and 12-14 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1, 6, 7 and 15 is/are allowed.
- 6) ☒ Claim(s) 9-11, 16, 17, 20-24, 27 and 28 is/are rejected.
- 7) ☒ Claim(s) 18, 19, 25 and 26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Response to Arguments***

1. Applicant's arguments with respect to claims (9-11, 16-17, 20-22, 23-24, 27-28) have been considered but are moot in view of the new ground(s) of rejection.

Applicant asserts that *"Sih, Prysby and Pajukoski, alone or in combination, do not teach or suggest "wherein the finger compensator is coupled to inputs of at least two arithmetical modules in a first set of arithmetical modules and at least one finger comprises an averaging unit coupled between at least two arithmetical modules in a second set of arithmetical modules, and wherein at least one arithmetical module is common to the first and second sets of arithmetical modules." recited in Claims 9-11".*

The examiner respectfully disagrees. The reference of Pajukoski, which was used in conjunction with the references of Sih & Prysby in order to reject claims 9-11, does suggest (See figs. 3 & 8) that wherein the finger compensator (413 & col. 5, lines 62-67) is coupled to inputs of at least two arithmetical modules in a first set of arithmetical modules (314, 316) and at least one finger comprises an averaging unit (364 & col. 4, lines 63-66) coupled between at least two arithmetical modules in a second set of arithmetical modules (314, 376), and wherein at least one arithmetical module (314) is common to the first (314, 316) and second (314, 376) sets of arithmetical modules.

In response to applicant's argument that there is no teaching, suggestion, or motivation to combine the references, the examiner recognizes that obviousness may be established by combining or modifying the teachings of the prior art to produce the

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claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988), *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992), and *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007). In this case, each of the references cited by the examiner pertains to a Rake receiver which is used to compensate for channel impairments, such as multipath. The manner in which compensation is performed in each of the references is different. The suggestion to combined lies in the fact that each of the reference teaches a particular element or feature taught by applicant's claimed invention, which is used in a rake receiver in order to compensate for multipath. However, taking the contrary, a new ground of rejection has been issued.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

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4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**4. Claim (9-11, 16, 20-22, 23, 27-28) are rejected under 35 U.S.C. 103(a) as being unpatentable over Sih et al (hereinafter Sih)(US Patent 6,608,858 B1) in view of Prysby et al (hereinafter Prysby) (US Patent 6,888,878 B2), and further in view of Pajukoski. (US Patent 6,580,772 B2)**

Re claim 9, Sih discloses a system comprising at least one portable unit and at least one network unit for radio communication, with at least one unit comprising at least one rake receiver for receiving information symbols comprising at least two fingers (In Fig. 7: 700A & B), and a combiner (710) coupled to said fingers.

But the reference of Sih fails to explicitly teach that wherein each of the at least two fingers comprises a finger compensator that compensates for frequency shift at the symbol level.

However, Prysby does. (See fig. 1: 101 & 103) Prysby discloses a plurality of RAKE fingers that provide time and phase compensation at the symbol level. Furthermore, one skilled in the art would know that frequency is related to the phase. And to prove that frequency & phase are related to each other, the examiner is providing evidence in which frequency is, in deed, related to phase. **(See US Patent 6,278,725 B1)** Equation 5 clearly shows that the change in frequency is directly proportional to how the phase changes with respect to time. It is clear from equation 5 that if the change in phase of the received signal is corrected, in other words we make the derivative of the phase equal to zero, then the left hand side, which is the frequency drift, of equation 5 will be equal to zero. And there won't be any frequency drifts. The

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reference of Prysby does teach compensating for phase errors at the symbol level, whereby suggesting that the frequency drifts will also be corrected based on equation 5 above.

Therefore, taking the combined teachings of Sih and Prysby as a whole, it would have been obvious to one of ordinary skills in the art to incorporate this feature into the system of Sih, in the manner as claimed and as taught by Prysby, for the benefit of compensating for the channel impairments.

The combination of Sih & Prysby discloses the limitations as claimed above, except they fail to teach that wherein the finger compensator is coupled to inputs of at least two arithmetical modules in a first set of arithmetical modules and at least one finger comprises an averaging unit coupled between at least two arithmetical modules in a second set of arithmetical modules, and wherein at least one arithmetical module is common to the first and second sets of arithmetical modules.

However, Pajukoski does. (See fig. 3 & col. 4, line 46 – col. 7 & fig. 8 & col. 9, lines 19-45) Pajukoski suggests wherein the finger compensator (413 & col. 5, lines 62-67) is coupled to inputs of at least two arithmetical modules in a first set of arithmetical modules (314, 316) and at least one finger comprises an averaging unit (364 & col. 4, lines 63-66) coupled between at least two arithmetical modules in a second set of arithmetical modules (314, 376), and wherein at least one arithmetical module (314) is common to the first (314, 316) and second (314, 376) sets of arithmetical modules.

Therefore, taking the combined teachings of Sih, Prysby, and Pajukoski as a whole, it would have obvious to one of ordinary skill in the art to incorporate this feature

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as claimed in the system of Sih, as modified by Prysby, for the benefit of compensating for channel distortion in a Rake receiver.

Claim 10 has been analyzed and rejected w/r to claim 9 above. Furthermore, the combination of Sih, Prysby & Pajukoski pertains to a CDMA communication system comprising base stations and mobile stations.

Claim 11 has been analyzed and rejected w/r to claim 9 above. Furthermore, the combination of Sih, Prysby & Pajukoski pertains to a CDMA communication system comprising base stations and mobile stations.

Re claim 16, the combination of Sih, Prysby, and Pajukoski further discloses that wherein said finger compensator comprises a filter and an amplitude normalizer coupled serially for receiving an input symbol signal and for generating all output symbol signal. (In Pajukoski, see col. 4, lines 4-14)

Re Claim 20, the combination of Sih, Prysby, and Pajukoski further discloses that most fingers each comprise a finger compensator, with all finger compensators together forming said compensator. (In Sih, see fig. 7)

Re Claim 21, the combination of Sih, Prysby, and Pajukoski further discloses that said rake receiver comprises a mixer for converting intermediate frequency signals into

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baseband signals, which mixer comprises an oscillator input coupled to a stable oscillator (In Sih, fig. 2, where a mixer 112 and an oscillator 220 are disclosed for converting IF signals to baseband signals).

Re claim 22, the combination of Sih, Prysby, and Pajukoski further discloses that wherein said finger compensator further comprises a plurality of delay paths. (In Sih, see fig. 7: 700A, B, N. Furthermore, it is well known in the art that each finger correspond to a particular delay path.)

Claim 23 has been analyzed and rejected w/r to claim 16 above.

Claim 27 has been analyzed and rejected w/r to claim 20 above.

Claim 28 has been analyzed and rejected w/r to claim 21 above.

**Claims (17, 24) are rejected under 35 U.S.C. 103(a) as being unpatentable over Sih et al (hereinafter Sih)(US Patent 6,608,858 B1), Prysby et al (hereinafter Prysby) (US Patent 6,888,878 B2) and Pajukoski (US Patent 6,580,772 B2), as applied to claims 9-11 above, and further in view of Sendonaris et al.(hereinafter Sendonaris) (US Patent 6,947,475 B2)**

Re claim 17, the combination of Sih, Prysby, and Pajukoski further discloses that wherein said finger compensator further comprises a first arithmetical module for multiplying said input symbol signal with a conjugated previous input symbol signal. (In Pajukoski, see fig. 2: 208)



But the combination of Sih, Prysby, and Pajukoski fails to teach a second arithmetical module for multiplying said output symbol signal with a previous output symbol signal.

However, Sendonaris does. (See fig. 4A & equations 19-20) Sendonaris suggests a second arithmetical module for multiplying said output symbol signal with a previous output symbol signal. (See col. 10, lines 30-39)

Therefore, taking the combined teachings of Sih, Prysby, Pajukoski & Sendonaris as a whole, it would have obvious to one of ordinary skill in the art to incorporate this feature as claimed in the system of Sih, as modified by Prysby & Pajukoski, for the benefit of achieving pilot filtering in a Rake receiver.

Claim 24 has been analyzed and rejected w/r to claim 17 above.

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. **Claims (9-11) are rejected under 35 U.S.C. 102(e) as being anticipated by Pajukoski (US Patent 6,580,772 B2)**

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Re claim 9, Pajukoski discloses a system comprising at least one portable unit and at least one network unit for radio communication (See col. 3, lines 24-31), with at least one unit comprising at least one rake receiver (See fig. 8 & col. 9, lines 19-20) for receiving information symbols comprising at least two fingers (See fig. 8 & col. 9, lines 25-29), and a combiner coupled to said fingers (See fig. 8: 912), wherein the at least two fingers each comprises a finger compensator (See fig. 8: 952) that compensates for frequency shift at the symbol level (See col. 3, lines 41-49 “digital symbol” & col. 9, lines 35-46 “it is inherent that 952 compensates for channel distortion with each finger”), wherein the finger compensator (See fig. 3: 413 & col. 5, lines 62-67) is coupled to inputs of at least two arithmetical modules in a first set of arithmetical modules (See fig. 3: 314, 316) and at least one finger comprises an averaging unit (See fig. 3: 364 & col. 4, lines 63-66) coupled between at least two arithmetical modules in a second set of arithmetical modules (See fig. 3: 314, 376), and wherein at least one arithmetical module (314) is common to the first (314, 316) and second (314, 376) sets of arithmetical modules.

Claim 10 has been analyzed and rejected w/r to claim 9 above. Furthermore, the reference of Pajukoski pertains to a CDMA communication system comprising base stations and mobile stations.

Claim 11 has been analyzed and rejected w/r to claim 9 above. Furthermore, the reference Pajukoski pertains to a CDMA communication system comprising base stations and mobile stations.

***Allowable Subject Matter***

7. Claims (1, 6-7, 15) are allowed.
8. Claims (18-19, 25-26) are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Contact***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEON FLORES whose telephone number is (571)270-1201. The examiner can normally be reached on Mon-Fri 7-5pm Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/L. F./  
Examiner, Art Unit 2611  
June 15, 2010

/David C. Payne/  
Supervisory Patent Examiner, Art Unit 2611